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ABSTRACT

This study determines effects of posthypnotic suggestions in dealing with attitudinal impediments of students performing the overhand volleyball serve. Subjects were 54 male and female college students enrolled in beginning volleyball. Subjects were assigned either to a control or to an experimental group. After four class sessions, a 10-trial pretest on the overhand volleyball serve was administered to both groups. Points were awarded according to distance from the net, with a back court serve receving the highest point value. The test was repeated after nine additional class periods. Prior to this repeated test, the experimental group had been hypnotized three times. During the repeated test session, these subjects were hypnotized for the fourth time. In this state the subjects were given the suggestion that their performance ability would be increased and that they would perform with confidence and ease when they served the volleyball. The subjects were then aroused and instructed to serve 10 volleyballs. The control subjects were also instructed to serve 10 volleyballs. After nine ensuing class sessions, a posttest was performed by both groups. Results indicate that hypnotic suggestions enabled these students to overcome their mental impediments in learning the overhand volleyball serve and that it is possible for verbalizations of the hypnotic type to accelerate skill development under such conditions as described in this study. (A 15-item bibliography is included.) (Author)

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EFFECTS OF POSTHYPNOTIC SUGGESTIONS ON THE OVERHAND VOLLEYBALL SERVE

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Researchers have devoted considerable time to the development of techniques for correcting physical impediments of the sports performer. Only recently have researchers begun to investigate the possibilities of correcting mental impediments in the sports performer.

In 1958, Hellebrandt(1) suggested that: "what we need most are techniques of motor learning that free the subcortical motor mechanism from an oppressive domination of a stressed cortex." The investigators in this study concerning posthypnotic suggestion consider hypnosis a potential technique for freeing a stressed cortex. This theory has been reinforced by the achievements of such performers as Ken Norton(11), the Kansas City Royals(13) and the Dallas Cowboys(9), all of whom have employed hypnotists. Charles Lundgren(4,5), Tennis Coach, USPLTA Teaching Professional and Psychologist, reports that he successfully employs hypnosis in teaching and coaching tennis players. Dr. G. Thomas Tait(12), Penn. State University, has stated that he has utilized hypnosis as an effective tool for building self-confidence in a number of athletes.

The purpose of this study was to determine the effects of post-hypnotic suggestions in dealing with attitudinal impediments of students performing the overhand volleyball serve.

Previous researchers have dealt with the effects of hypnosis upon physical performance as measured by physiological parameters. Nemtzova and Schattenstein(8) reported that changes in oxygen consumption and pulse rate of hypnotized subjects corresponded with the suggested work load rather than with the actual work load. Morgan et al.(7) tested subjects performing moderate work (100 watts) in waking and hypnotic conditions. Subjects rated their level of perceived exertion on a psychophysical category scale suggested by Borg and Linderholm. The investigators reported that perceptual ratings were congruent with the various hypnotic suggestions and that the physiological responsivity tended to agree more with the subjective judgment of work intensity than it did with the actual work intensity.

Johnson and Kramer(2) studied the effect of 4 types of hypnotic suggestion on motor performance during the task of pressing a 47 pound barbell from a supine position. They reported a significant difference only when posthypnotic suggestions called for reduced performance and failure. The other 3 conditions involved suggestion to improve performance.

Johnson, Massey and Kramer(3) used the bicycle ergometer to study the effect of posthypnotic suggestion on all out rides. The mean advantage of the ride following posthypnotic suggestions was not statistically significant. However, subjective reports by the subjects regarding their conditions were favorable to the suggestions. Six of the 10 subjects had faster times after posthypnotic suggestions.

Roush(10) using grip and arm muscle strength and endurance tests, reported an increase in performance during the hypnotic state. She indicated that this increase probably was due to removal of inhibitory influences during hypnotic states.

The results of most of these studies suggest that the response of various physiological parameters tend to correspond with the hypnotic suggestion rather than with the actual work load. It would appear logical to follow these investigations with a study to determine the effect of hypnotic suggestion upon negative attitudes which reduce or inhibit maximum efficiency in performance.

Method

Subjects: Subjects for this study were 54 male and female college students, between the ages of 18 and 22, enrolled in Beginning Volleyball classes at Southwest Missouri State University. Thirty subjects volunteered for the experimental group. Each subject was asked to sign a statement declaring that he or she had never taken narcotic drugs and had never shown traces of epilepsy. The 24 remaining subjects served as the control group.

Procedure: Following 4 class sessions a pre-test on the overhand volleyball serve was administered to all subjects. The test consisted of serving 10 volleyballs into a standard court (60'x30') (Net height 7'4½"). One half of the court was marked into 3 equal sections of 10 feet. The section closest to the net was scored 1 point, the adjacent section was scored 3 points and the segment farthest from the net was scored 5 points. An additional 3 feet marked behind the endline was scored 3 points.

Following the pre-test, subjects in the experimental group were hypnotized once for orientation to the hypnotic state and twice for familiarity with the test environment. In all of the hypnosis sessions in this experiment, subjects were hypnotized one at a time.

After 9 classes with the same instructor, the pre-test was repeated by both groups. During this repeated test sessions, subjects in the

experimental group were hypnotized for the fourth time in the Motor Learning Laboratory adjacent to the testing gymnasium. The hypnotic relaxation was continued until a trance-like appearance became evident to the operator, and the subjects had adequately performed the hand levitation test for trance depth. At this time the subjects were given the suggestion that their performance ability would be increased and that they would perform with confidence and ease when they served the volleyball. The subjects were then aroused and instructed to go to the service line and serve 10 volleyballs. The control subjects were instructed to go to the gymnasium from another location and serve 10 volleyballs.

After 9 additional classes, a post-test was performed by both groups. In all 3 tests, subjects in both groups were tested one at a time and, where possible, at the same time of day as their previous tests. The same volleyballs were used for each test session and were checked for air pressure prior to each test session. The same 3 test assistants were used for all test sessions.

Results: The data was analyzed by utilizing the analysis of covariance technique to adjust the final means. Each set of adjusted means was tested for significance by use of the t test.

TABLE I

ADJUSTED MEANS EXTRACTED DURING THE ANALYSIS OF COVARIANCE TECHNIQUE

	Control Group	Experimental Group	diff.	t
Pre-Test - Repeated-Test	25.46	33.09	-7.63	-3.44**
Pre-Test - Post-Test	31.19	34.74	-3.55	-1.96*
Repeated-Test - Post-Test	33.38	30.85	2.53	1.20

**Significant at the .01 level
* Significant at the .05 level

Table I shows that a significant difference at the .01 level was found between the pre-test and the repeated test. Between the pre-test and the post-test a significant difference was found at the .05 level of significance. These differences were in favor of the experimental group. No significant difference was found between the repeated test and the post test.

Discussion

The results of this study indicate that hypnotic suggestion enabled these students to overcome their mental impediments in learning the over-hand volleyball serve. The results also indicate that verbalizations of the hypnotic type tend to accelerate skill development under the conditions described in this study. This tends to support the statements by Lundgren(4,5) and Tait(12) that they successfully use hypnosis to improve performance. Although this resulting skill development appears to be sustained to some degree, the positive effects of the hypnotic suggestion may be limited to a given span of time.

Judging from the results of this study, it appears that hypnotic suggestions affect some subjects to a greater extent than others. Twenty-five per-cent of the experimental subjects in this study more than doubled their original performance scores. Ten per-cent of these experimental subjects more than tripled their original performance scores. This compares with the one example reported by Johnson and Kramer(2) concerning a subject who improved his performance about threefold when hypnosis was induced. It appears possible, then, that hypnosis may be a useful technique for teachers and students in their efforts to eliminate or reduce mental impediments in the development of skills.

In the interest of future research, the investigators feel that consideration should be given to the following:

1. Subjects in the experimental group should perhaps be selected at random. Volunteers are apparently interested in hypnosis and may favor the study. The possibility that subjects may volunteer because they are looking for a technique to improve their performance, should also be considered.

2. It is yet to be determined whether the content of the hypnotic suggestion and the manner in which they are presented determine their effectiveness.

3. Thus far it has been assumed that the effects of posthypnotic suggestions reveal themselves immediately after being aroused from the hypnotic trance. It is possible that the effects may be more pronounced at another time.

4. For a controlled recheck of the results, another investigation should be conducted replicating the methods employed in this investigation.

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